

Superseded by 50MD-251 7/72
Single-Package Cooling Units

(Mobile Home Unit)

INTRODUCTION

The 50MH unit is a complete cooling system, with provision for addition of accessory electric heaters. Units are air cooled, designed for outdoor installation and may be connected into existing duct system. Required connections include air ducts, condensate drain, line and control power wiring. A field-supplied filter box must be installed for return air.

TRANSPORTATION DAMAGE

File claim with shipping company if shipment is damaged or incomplete. Move unit to installation site in upright position.

PRELIMINARY SURVEY

Consult local building codes for special installation requirements.

When installing unit, allow sufficient space for condenser air-flow clearance, wiring, and servicing unit (see Fig. 1). Position unit so water from roof will not pour directly on top of unit.

Mounting Pad (Fig. 1) — Install unit on a solid, level-poured concrete pad or equivalent. Construct pad so top is a minimum of 3 in. above ground level. Pad must not be more than one inch longer or wider than unit. Extend a 24-in. gravel apron completely around pad. Insert a sheet of tar-base construction felt paper between unit and pad.

DUCTWORK

Design duct system to have a friction loss of between .25 in. wg and .70 in. wg for proper unit operation. Insulated flexible ductwork (1-ft inside diameter) of weatherproof type is recommended. Do not reduce duct inside diameter below 1 ft. Combined length of supply and return ducts should not exceed 20 ft with a minimum supply duct length of 6 ft and a minimum return duct length of 3 ft. Do not operate unit longer than 5 minutes without ductwork. If necessary, refer to Carrier System Design Manual, Part 2, for air duct design.

Flanges are provided on unit for attaching ductwork. See Fig. 1 for connection sizes and Fig. 2 for typical duct installation.

Supply Air Connection — Connect flexible duct to unit supply air connection. When unit is equipped with electric heaters, insert a sheet metal sleeve inside of flexible duct. Sleeve must extend 24 in. from electric heater element. At approximate

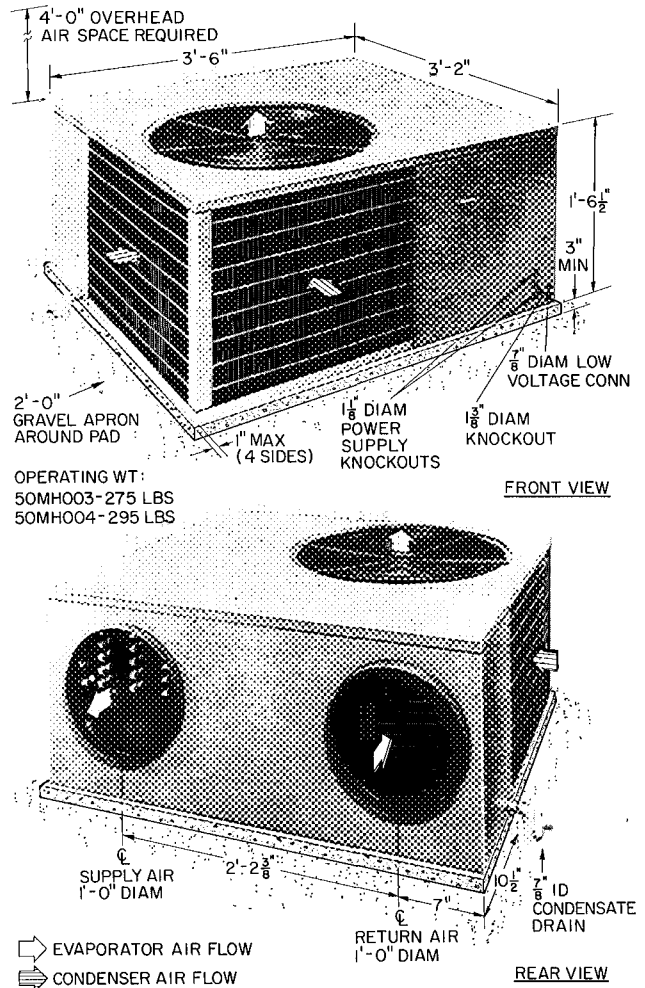


Fig. 1 — Dimensions and Connections

center of trailer, connect flexible duct to main supply duct with a 90-degree sheet metal elbow. Install turning vanes in main supply duct directly above elbow connection using standard sheet metal practices.

Return Air Connection — Purchase or field fabricate a filter box. *Suggested minimum filter box dimensions are shown in Fig. 3 (see page 3).* At approximate center of trailer, cut a return air opening in floor. Locate opening where it will not be obstructed by furniture. Size opening to accept filter box. Cut hole in carpet or floor covering same size as filter box floor opening. Ensure electrical wiring or main structural supports are not accidentally cut. Insert filter box thru floor opening. Weatherseal floor connection in accordance with good construction practice. Insert filters in filter box, and cover with return air grille.

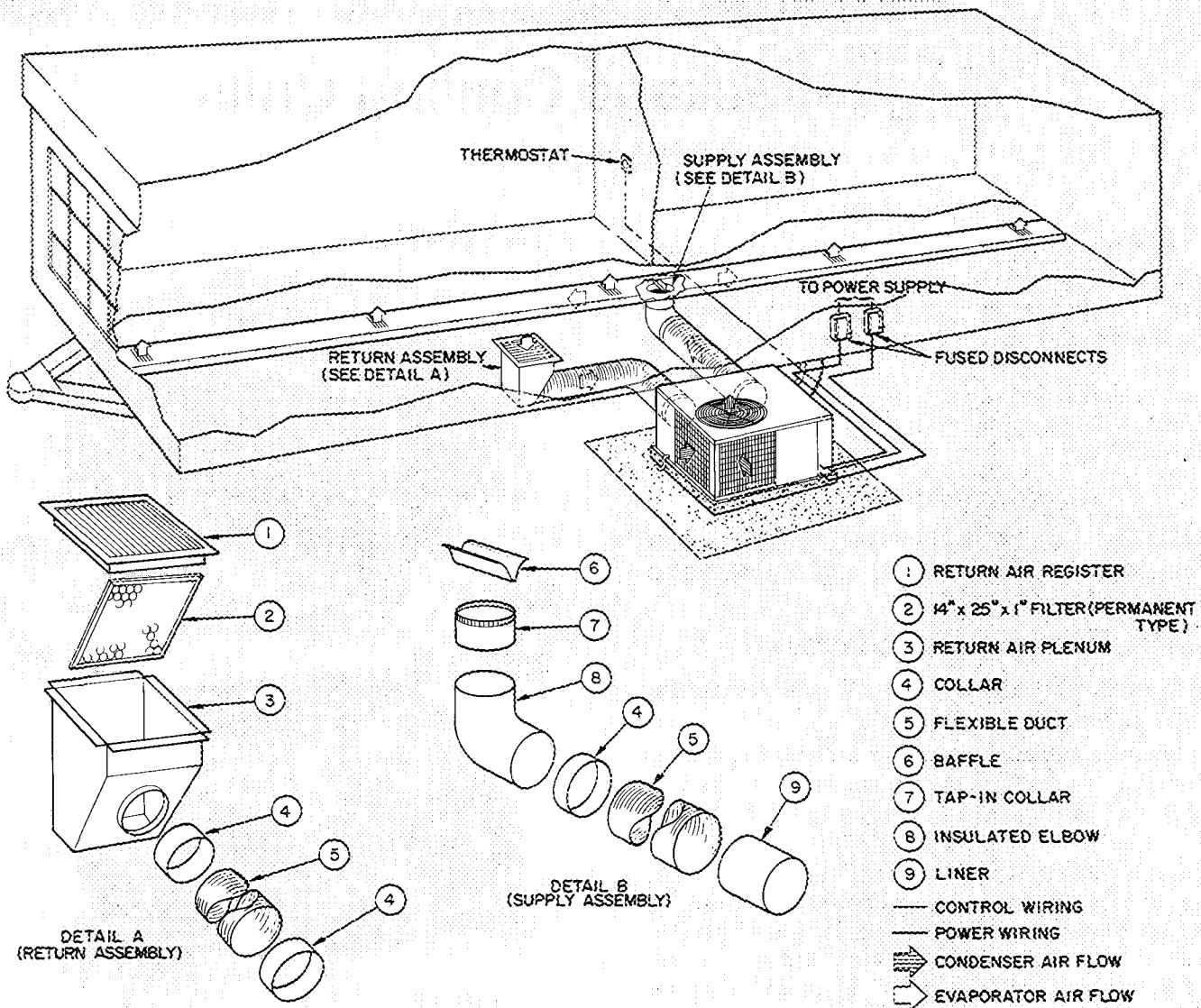


Fig. 2 — Typical Installation

Connect flexible duct to filter box. Extend duct from filter box to unit return air connection. If possible, insert a total of a 90-degree bend in return air duct for sound dampening. Connect duct to unit return air connection.

When existing furnace is kept in system:

During heating season, insert a sheet metal panel beneath return air grille and over filter to prevent air movement thru cooling unit.

When furnace is removed from system, blank off original furnace floor connection.

CONDENSATE DRAIN

A condensate trap is factory supplied and taped to unit suction line for shipment. Connect trap to unit condensate drain fitting with clamp provided. See Fig. 4 and 5.

Applying Clamp

1. Pull ends apart.

2. Wrap around condensate trap with toothed end beneath. Prelatch by compressing until last ratchet teeth catch behind small tabs.
3. Grip adjacent bridges with pliers and compress to tight position.
4. To remove, lift the locking tongue with screwdriver.

ELECTRIC RESISTANCE HEATER

Remove fan section access panel and sheet metal plate covering heater installation area (between evaporator fan discharge and supply air connection). See Fig. 6. Discard sheet metal plate and insert heater into opening provided. Insert heater support bar thru hole in side of fan discharge duct. Fasten heater in place at top and bottom with two sheet metal screws. See Wiring section for power connection details.

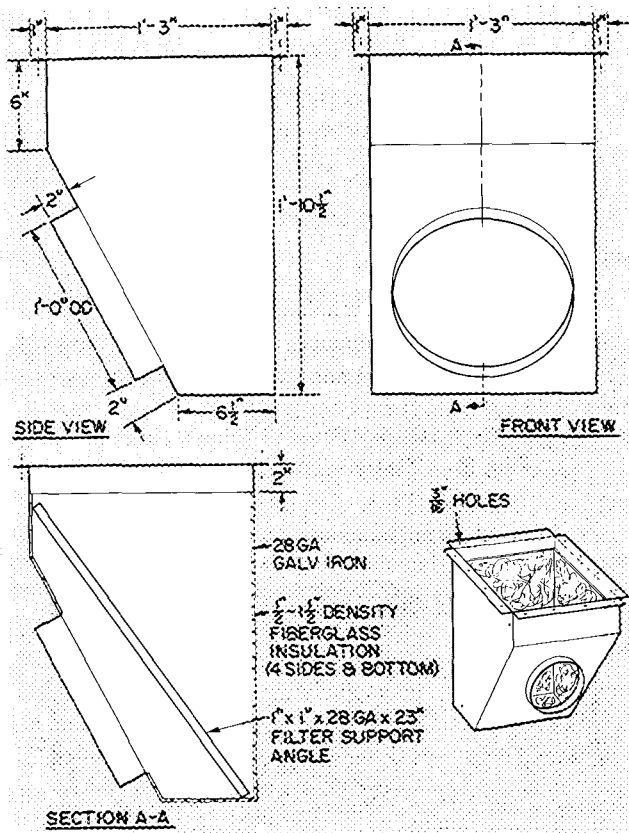


Fig. 3 – Minimum Dimensions Return Air Filter Box

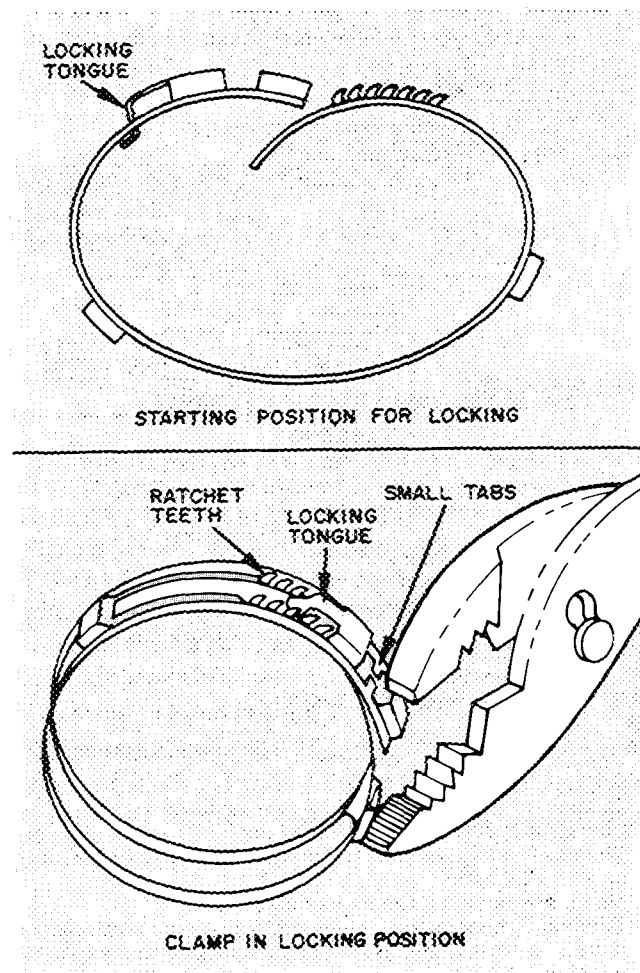


Fig. 4 – Condensate Drain Clamp

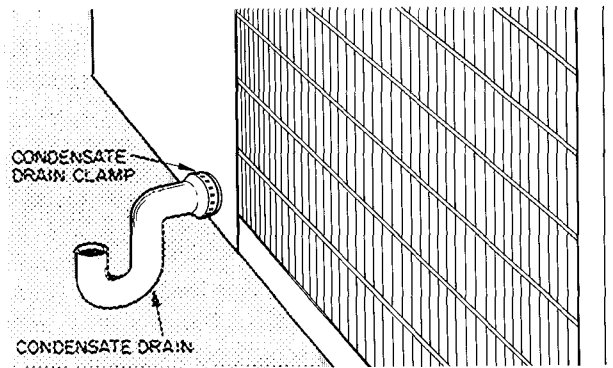


Fig. 5 – Condensate Drain Connection

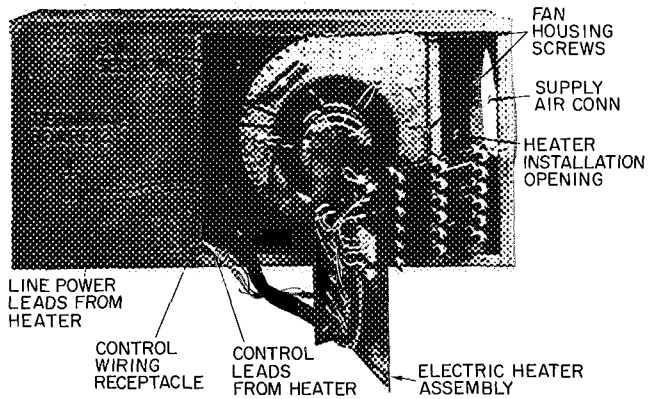


Fig. 6 – Electric Resistance Heater Installation

ELECTRICAL DATA AND WIRING

Table 1 – Unit Electrical Data

MODEL	VOLTS/PH	COMPR		EVAP	COND	BRANCH CKT		
		LRA	FLA	FAN FLA	FAN FLA	Wire Size (AWG)	Max Ft Wire	Fuse Amps
003	230/1	86.0	19.5	3.4	1 1	10	30	30
004		93.0	20.0	3.4	1 1	10	30	30

LRA – Locked Rotor Amps

FLA – Full Load Amps

NOTE:

Motors and controls will operate satisfactorily 10% above and 10% below unit voltage. Control circuit voltage is 24 volts on all units.

Table 2 – Electric Resistance Heater Data

UNIT 50MH	ELECTRIC HEATER						
	Volts/Ph	KW	Branch Circuit				Fuse Amps
			No.	FLA (ea)	Wire Size (AWG)	Max Ft Wire	
003 & 004	240/1	5	1	20.8	10	30	30
		10	1	41.7	6	30	50
		15	2	20.8	10	30	30
				41.7	6	30	50

Wiring – Field wiring must comply with local and national codes. Install a branch circuit fused disconnect of adequate size to handle unit starting current. Provide a separate fused disconnect for

each electric resistance heater. Voltage to unit during operation must be within $\pm 10\%$ of voltage range indicated on nameplate.

Failure due to operation of unit on improper line voltage constitutes abuse and is not covered by Carrier Warranty.

LINE POWER – Bring line power leads from fused disconnect thru hole provided (Fig. 1) into high voltage section of control box. Connect line power leads to Terminals 1 and 2 on Terminal Board 1. See label diagram and Fig. 7. Aluminum field wiring may be used when splice connected to copper pigtailed from unit with approved copper to aluminum splice connectors.

Accessory Electric Heater(s) – Connect line power leads from fused disconnect(s) to Terminal Board 2 as shown in Fig. 7. Extend power leads (supplied with electric heater) from heater thru fan section and thru hole provided into high voltage section of control box. Connect leads to Terminal Board 2 (Fig. 6 and 7).

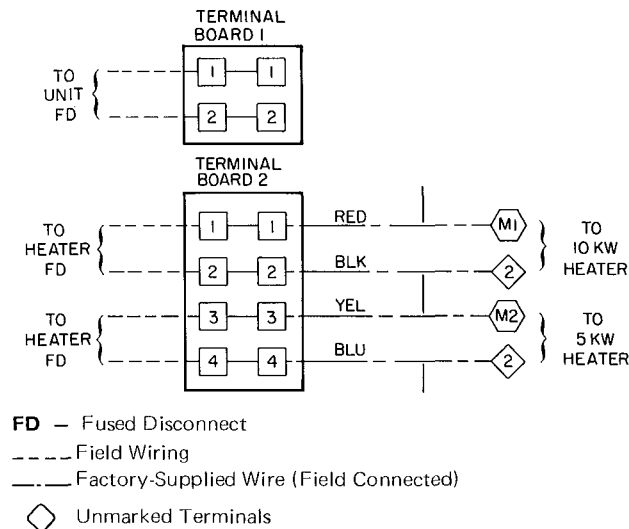
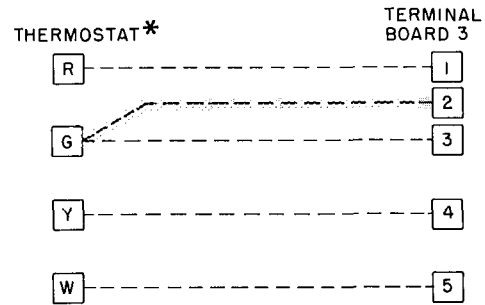


Fig. 7 – Line Power Connections

Evaporator Fan Motor is factory wired for high speed operation as shown in Fig. 9. If medium or low speed operation is desired, remove black motor lead from Contactor Terminal 23 and replace with blue motor lead for medium speed or red motor lead for low speed. *Tape unused leads separately.*

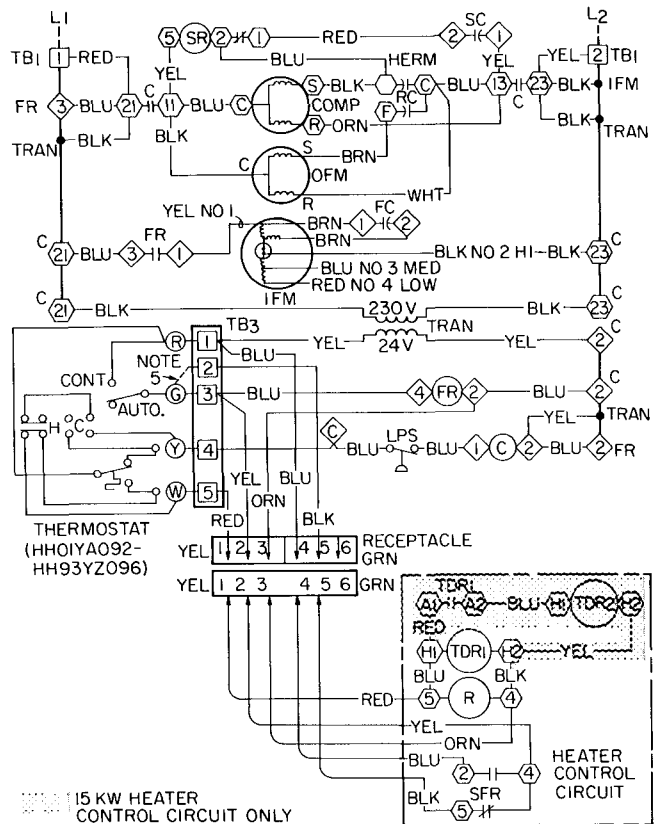
THERMOSTAT LEADS (24 v) are brought thru hole provided (Fig. 1) into low voltage section of control box. Connect leads to Terminal Board 3 as shown in Fig. 8 and 9.

Accessory Electric Heaters – Extend control leads with plug (supplied with heater) thru fan section and insert plug into receptacle located on side panel of control box. See Fig. 6 and 9.



Connect Terminal G to Terminal 2 for operation with electric heater or Terminal 3 for operation without electric heater
 - - - - Field Wiring
 *HH01YA092 thermostat with HH93YZ096 subbase

Fig. 8 – Thermostat Connections



- LEGEND**
- | | |
|----------------------------------|---------------------------------|
| C – Contactor | TC – Thermostat, Cooling |
| Comp – Compressor | TDR – Time-Delay Relay |
| FC – Fan Capacitor (IFM) | TH – Thermostat, Heating |
| FR – Fan Relay | Tran – Transformer |
| IFM – Indoor Fan Motor | --- Field Power Wiring |
| LPS – Low-Press. Switch | --- Field Control Wiring |
| OFM – Outdoor Fan Motor | --- NEC Class 2, 24 v. |
| R – Relay | ◊ Marked Connections |
| RC – Run Capacitor (Dual) | ◊ Unmarked Connections |
| SC – Start Capacitor | ◻ Terminal Board Connections |
| SFR – Safety Fan Relay | |
| SR – Start Relay | |
| TB – Terminal Board | |

- NOTES**
- To be wired in accordance with NEC and local codes
 - Low-pressure cutout setting 27.0 ± 4 psig.
 - Terminations in junction box suitable for NEC Class 2 control circuit, at 24 volts
 - Motor provided with inherent thermal protector.
 - Terminal G connects to terminal no. 2 for operation with electric heater. Terminal G connects to terminal no. 3 for operation without electric heater

Fig. 9 – Typical System Wiring Diagram

START-UP

Adjust remote control center as follows:

1. Set selector switch at "Off."
2. Fan switch at "Auto." or "Fan."
3. Turn on main disconnect switch(es) to unit.
4. Set thermostat dial to the desired temperature.
5. Selector switch at "Heat" or "Cool."

Electric Resistance Heater Operation — When thermostat calls for heating, evaporator fan and heater no. 1 are energized immediately. Remaining heaters are energized in 30 second intervals. When thermostat is satisfied, the cycle reverses and heaters are de-energized in 30-second intervals. Evaporator fan motor shuts off with last heater.

SERVICE

Table 3 — Service Data

UNIT	50MH003	50MH004
R-22 CHG (lb-oz)*	3-0	3-11
Refrig Control	TXV	TXV
COMPRESSOR	38GC401404	51YA400524
Type Start	CSR	CSR
Oil Recharge (oz)	45	50
EVAP FAN	Centrifugal — Direct Drive	
Rpm	1075 — 950 — 850	
Diam (in.)	10	10
Width (in.)	8	8
Nom Cfm	1125	1350
Nom Motor Hp	$\frac{1}{3}$	$\frac{1}{3}$
COND FAN	Propeller — Direct Drive	
Rpm	1050	
Diam (in.)	18	18
Nom Cfm	2400	2400
Nom Motor Hp	$\frac{1}{6}$	$\frac{1}{6}$

CSR — Capacitor Start

*Factory refrigerant charge

REFRIGERANT CHARGING

Refrigerant System is factory charged. When recharging is necessary, weigh in total charge indicated in Table 3. Blow any refrigerant remaining in system before recharging. Standard 1/4-in. Schraeder service connections provided on high and low sides of refrigerant system for evacuation and charging.

LUBRICATION

Compressor contains factory oil charge. Replace oil when lost. See Table 3 for oil charge. If necessary, refer to Carrier Standard Service Techniques

Manual, Chapter 1, pg 1-21, for oil recharging procedure. Use Carrier PP33-1, Texaco Capella B or Suniso 3G oil.

Fan Motor Bearings are prelubricated for three years heavy duty or five years normal duty. When lubrication is necessary, send motor to authorized motor repair shop.

CONDENSER

Coil — Lift or remove unit top cover for access to condenser coil. Inspect coil periodically. Clean with brush, vacuum cleaner, low-pressure water, steam or air.

Fan Position — Required fan position is shown in Fig. 10. Adjust fan by loosening setscrews and moving blades up or down.

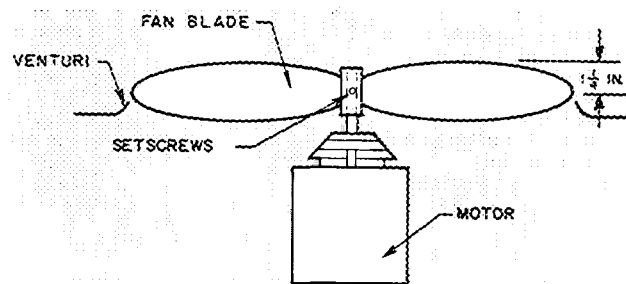


Fig. 10 — Condenser Fan Position

EVAPORATOR

Coil — Lift or remove unit top cover for access to evaporator coil. Inspect coil periodically. Clean with brush, vacuum cleaner or low-pressure air.

CONDENSATE DRAIN — Clean condensate drain trap with bottle brush, then flush condensate pan beneath evaporator coil with clean water. Ensure water flows freely thru condensate drain.

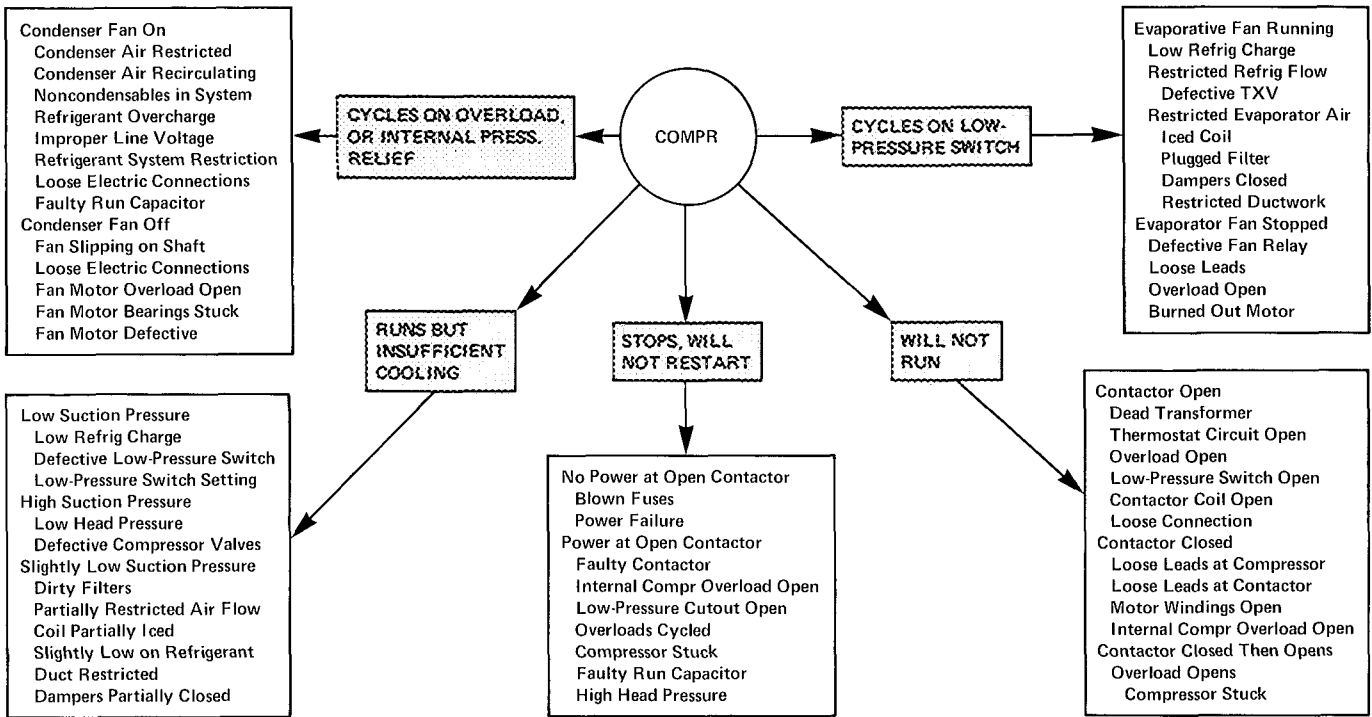
Evaporator Fan Wheel should be centered in fan housing. To adjust, loosen setscrews holding fan to motor shaft. Adjust fan and retighten setscrews.

EVAPORATOR FAN REMOVAL — Disconnect fan motor wiring. Remove two fan housing sheet metal screws shown in Fig. 6 and slide out complete fan and motor assembly.

RETURN AIR FILTER

Clean filter a minimum of twice yearly. Flush permanent-type filter with hot water, steam or soak in mild solution of soap or detergent and water. Allow filters to dry and replace. Refer to filter manufacturer's instructions, as required, for other types of filters.

TROUBLESHOOTING CHART



WARRANTY – EXTENDED PROTECTION PLAN

GENERAL WARRANTY STATEMENT – We warrant all Carrier products to be free from defects in material and workmanship under normal use and service. Our obligation shall be limited to repairing or supplying a replacement for the defective part, assembly or portion thereof, which our inspection shall show to be defective, F.O.B. Carrier factory.

PERIOD OF COVERAGE

First Year Warranty – The above warranty applies for one year from date of original installation to all parts and components in the Carrier product identified below excepting refrigerant, air filters and filter-driers which are not included in any part of this warranty.

Motor-Compressor Protection Plan – The above warranty applies for five years from date of original installation to the Hermetic Motor-Compressor only in the product identified below. Carrier will allow transportation for the Hermetic Motor-Compressor between the factory and its authorized distributor.

GENERAL CONDITIONS – This warranty does not cover the cost of labor for any adjustments or service calls, nor does it include the cost of labor for replacing defective parts or components.

This warranty does not apply if the Carrier product or any part thereof has been subjected to misuse, abuse, neglect, accident or alteration.

This warranty applies only to Carrier products installed within the boundaries of the Continental United States, Canada and Hawaii, and only applies to parts supplied or designated by Carrier.

This warranty is in lieu of all other warranties expressed or implied, and in no event shall Carrier be liable for any special, indirect or consequential damages.

IMPORTANT – Obligations of Purchaser (not included in this warranty)

1. Failure to start due to voltage conditions, blown fuses or other damage due to inadequacy or interruption of electrical service.
2. Filter replacement or cleaning of evaporator coil, condenser coil or heat exchanger.
3. Damage due to freezing of condensing water, inadequate or interrupted water supply, use of corrosive water or rearrangement of plumbing system.
4. Failure resulting from overfiring, use of incorrect fuel, and improper burner or control adjustments.
5. Damage caused by accident, misapplication, abuse, alteration, tampering or servicing by other than an authorized agency.
6. Damage resulting from use of equipment in corrosive atmosphere.
7. Damage due to lack of proper maintenance.

Carrier products are the result of years of research in development laboratories. The most modern precision production methods, together with every precaution through inspection and test, combine to insure long life and economical service. The user of this product should assist in maintaining this maximum of long life and economical service by following the instructions contained in the Instruction Packet included with the product.

Service or other labor charges not included in this warranty may be covered by a service agreement through the seller at time of purchase. Such agreement or contract shall be separate and apart from this factory equipment warranty.

CARRIER AIR CONDITIONING COMPANY • SYRACUSE, NEW YORK

Name of Owner

Address of Installation

Unit Model No.

Unit Serial No.

Date of Installation

Installed by

Fill out warranty record and return to Carrier Air Conditioning Company, Syracuse, N.Y. within 15 days after installation in order for this warranty to be effective.

FOLD BACK ALONG THIS LINE AND STAPLE, GLUE, OR TAPE CLOSED –
OPEN ON THIS END

FOLD BACK ALONG THIS LINE AND STAPLE, GLUE, OR TAPE CLOSED —
OPEN ON THIS END



BUSINESS REPLY ENVELOPE
FIRST CLASS PERMIT NO. 1005, SEC. 34.9 P.L. & R., SYRACUSE, N. Y.



CARRIER AIR CONDITIONING COMPANY
CARRIER PARKWAY
SYRACUSE, NEW YORK 13201

SERVICE ENG. DEPT. TR-20

FOLD LINE

INSTRUCTIONS

If any equipment deficiencies are found at the time of installation, fill out the reverse side of this form giving a complete, explicit description. Use sketch if necessary. Make out and mail a report every time a deficiency is found.

WARRANTY RECORD

(To be completed by end user)

SERIAL NO. _____

DATE INSTALLED _____ PART NO. _____

DEALER NAME _____

STREET _____ CITY _____

COUNTY _____ STATE _____ ZIP _____

CUSTOMER NAME _____

STREET _____ CITY _____

COUNTY _____ STATE _____ ZIP _____

Unit Installed In 1 Family Home 2 Family Home Apartment Mobile Home

Room Installed _____

Age of Home _____ Value of Home _____

If other than home, was it Office Store Hotel & Motel Other

Is this central air conditioner your 1st unit or a replacement unit

Brand replaced _____

Does it replace a room air conditioner Yes No

Brand replaced _____

For replacement items use Carrier specified parts.

Manufacturer reserves the right to change any product specifications without notice.

CARRIER AIR CONDITIONING COMPANY • SYRACUSE, NEW YORK